but no motion of the camera seems likely to explain the many details in these ribbon photographs of natural lightning. On the contrary, there is one flash on Mr. Stewart-Smith's plate that has every indication of being certainly an oscillatory discharge, showing lines of flow identical with those photographed by Professor Trowbridge at Cambridge, and fully maintaining his conclusion, which was also that of Prof. Joseph Henry and J. Ogden Rood, that the lightning flash is an oscillatory discharge, repeated frequently to and fro within the crack in the air that is opened up by the first discharge. The whole process requires but a few millionths of a second, and the motion of the camera within that short time is insignificant.

THE KITE AND TELEPHONE.

On page 257 of the MONTHLY WEATHER REVIEW for June, 1898, we have referred to some interesting experiments on H. M. S. *Dauntless*, concerning which the Aeronautical Journal states that there is no such ship, that no such experiments were made in the navy, and that in recent kite experiments made on the torpedo boat destroyer *Daring* the kites were of the Baden-Powell pattern.

In a letter on this subject from Mr. S. P. Fergusson, of Blue Hill, he says:

> The only experiments with kite telephones or telephone kites that I know of have been made in this country by Mr. William A. Eddy, of New York, who nearly two years ago succeeded in telephoning and telegraphing over a line held by kites. See Boston Herald, December 7, 1896 (or perhaps New York Herald of same date). It seems that the wire was carried over trees, several roadways or streets, etc., and lowered so that connections were readily made and messages sent. After all, the Americans are still ahead in the matter of kites for scientific purposes.

A MEMORIAL TO VOLTA.

The study of electricity begins with the discoveries of Galvani and Volta, especially the invention of the dry pile by the latter. The electricians of Italy announce that they have organized a committee, with a central office in Milan, to organize an international electrical exposition, to be held at Como, on Lake Como, in May, 1899, to which they invite the cooperation of telegraphers and electricians throughout the world. It is proposed to deposit a bronze crown at the foot of the statue of Volta that his native town long since erected to the celebrated electrician. A more delicate tribute could scarcely be imagined, and the Americans who may be able to be present at the ceremony will undoubtedly witness one of the most beautiful scenes of this century of centennials.

STUDIES OF THE JAPAN CURRENT.

We notice in several California papers earnest articles advocating the study of the Japan current and its relation to the weather of the Pacific coast. Especially does Mr. W. S. Prosser, of Auburn, Cal., state that in 1878 or 1879 he suggested this very thing and urged favorable action on the authorities at Washington.

It ought hardly to be necessary to assure the citizens of the Pacific coast that the Japan Current, like the Gulf Stream, has been studied with much care by the navigators of all nations, and charts have been published showing the temperature and the movement of the surface water, not only for these special currents, but for the whole of the surrounding ocean for each month in the year. These charts show that without any doubt whatever the currents as such soon dwindle away, and all that is left is a very slow movement of the water too and fro with the wind. It is the west wind that strikes our Pacific coast, and not the Japan Current. This wind brings moisture from the Pacific Ocean, and not from the neighborhood of Japan. It is these moist winds, and not the ocean currents that control the climate of California.

The hydrographic offices of all nations are engaged in the study of ocean currents and surface drifts as such, including their dependence upon the winds. The meteorologist studies the winds as affected by the surfaces of the land and ocean, but he finds the atmosphere moving so rapidly and its various portions so easily intermixed with each other that it is at present impossible to tell whether the moisture brought by the wind to California comes from the Pacific Ocean in general, or from the Japan Current especially. In fact, it matters little to him where it comes from. He has to take it as he finds it over California, and then decide whether it is rising and cooling to form cloud and rain, or whether it is descending and likely to stay unprecipitated. The important features of the weather of California depend principally upon whether its winds are descending and being pushed outward from a high and dry area to the northeastward, or whether they are ascending and coming from moister air to the northwestward. It is the air supplied from the high pressure area on the southwest between California and Hawaii that gives the former her long continued spells of dry, clear weather. The length of these spells may depend, in a general way, upon atmospheric conditions; not on the condition of the ocean.

METEOROLOGICAL TABLES AND CHARTS.

By A. J. HENRY, Chief of Division of Records and Meteorological Data.

Table I gives, for about 130 Weather Bureau stations making two observations daily and for about 20 others making only one observation, the data ordinarily needed for climatological studies, viz, the monthly mean pressure, the monthly means and extremes of temperature, the average conditions as to moisture, cloudiness, movement of the wind, and the departures from normals in the case of pressure, temperature, and precipitation, the total depth of snowfall, and the mean wet-bulb temperatures. The altitudes of the instruments above ground are also given.

Table II gives, for about 2,700 stations occupied by voluntary observers, the highest maximum and the lowest minimum temperatures, the mean temperature deduced from the average of all the daily maxima and minima, or other readings, as indicated by the numeral following the name of the station; the total monthly precipitation, and the total depth in inches of any snow that may have fallen. When the spaces in the snow column are left blank it indicates that no snow has fallen, but when it is possible that there may have been snow of which no record has been made, that fact is indicated by leaders, thus (. . . .).

Table III gives, for about 30 stations furnished by the Canadian Meteorological Service, Prof. R. F. Stupart, director, the means of pressure and temperature, total precipitation and depth of snowfall, and the respective departures from normal values, except in the case of snowfall.

Table IV gives, for 26 stations selected out of 113 that maintain continuous records, the mean hourly temperatures de-